

Research on the Construction Features of Traditional Manual Porcelain Workshop in Jingdezhen

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Abstract

When it comes to the porcelain industry in Jingdezhen, it has a long history and is famous all over the world. As the main porcelain production place, the workshop is accompanied by the traditional manual porcelain making technology, which presents the unique architectural construction features. In this thesis, it takes the traditional porcelain workshop of Jingdezhen in the Ming and Qing Dynasties as the research object. By analyzing the spatial layout and function, architectural features and construction concept, it gets the conclusion that the layout of traditional manual porcelain workshop in Jingdezhen is reasonable, the unique architectural style and form are concise and practical, which pursues the harmony and unity of function, structure and style. Therefore, it embodies the construction concept of "unity of heaven and man" in ancient architecture, which hopes to bring some enlightenment to modern production-oriented architecture.

Keywords

Jingdezhen; Manual porcelain workshop; Construction features; Construction concept.

1. Introduction

Jingdezhen is the only city in the world that relied on a single ceramic industry to continue the previous year, and its porcelain-making history is long. Jingdezhen has not only a wealth of ceramic material and cultural heritage, but also a large amount of intangible cultural heritage, which together constitute the most unique and precious wealth of the city. The traditional manual porcelain workshops in Jingdezhen during the Ming and Qing Dynasties were the place for traditional porcelain production and the important cultural relics of the porcelain industry in Jingdezhen. It usually includes two building types: Kiln houses and manual workshop houses. This article studies the manual workshop houses in Jingdezhen. The traditional manual porcelain workshop in Jingdezhen is accompanied by manual porcelain skills. It has a long history, simple structure and reasonable layout, which reflects the principle of economy and applicability of production architecture. It is a model of ancient Porcelain building in China and a unique cultural landscape in traditional Chinese porcelain making culture. The history of Jingdezhen's porcelain making can be traced back to the late Tang Dynasty. It became the national porcelain making center during the Ming and Qing Dynasties. It developed along two lines of official and civil kilns. The porcelain-making handicraft industry was developed. Therefore, the workshops of this period can best represent traditional hand-made. The features of the porcelain workshops, the traditional hand-made porcelain workshops in Jingdezhen during the Ming and Qing Dynasties, from the layout to the architectural style, to the construction concept, all present the features of very regional features.

2. Reasonable Courtyard Layout

There are various plane layout forms of ancient buildings in China. Among them, the courtyard layout of the building complex is the most typical and can best represent the features of Chinese ancient buildings, that is, the atrium is surrounded by discrete building units, and the atrium is a courtyard or patio, so as to achieve the spatial effect of closed periphery and open interior. This closed, warm and comfortable courtyard layout not only reflects the sense of order in the organization of the building complex, but also carries the traditional ideas and aesthetic interests of the Chinese people.

2.1. Layout and Function of Courtyard

The layout of the traditional porcelain workshop in Jingdezhen was deeply inspired by China's traditional architectural culture, especially the courtyard style folk house culture. In the process of continuous improvement and perfection of porcelain production techniques, combined with the needs of local manual porcelain production, people chose the courtyard style layout as the plane construction feature of the slab house. Practice proves, this kind of layout means no matter be daylighting, ventilated, dustproof, still avoid rain, very benefit pottery and porcelain production, its structure is reasonable, layout is compact, economy is applicable.

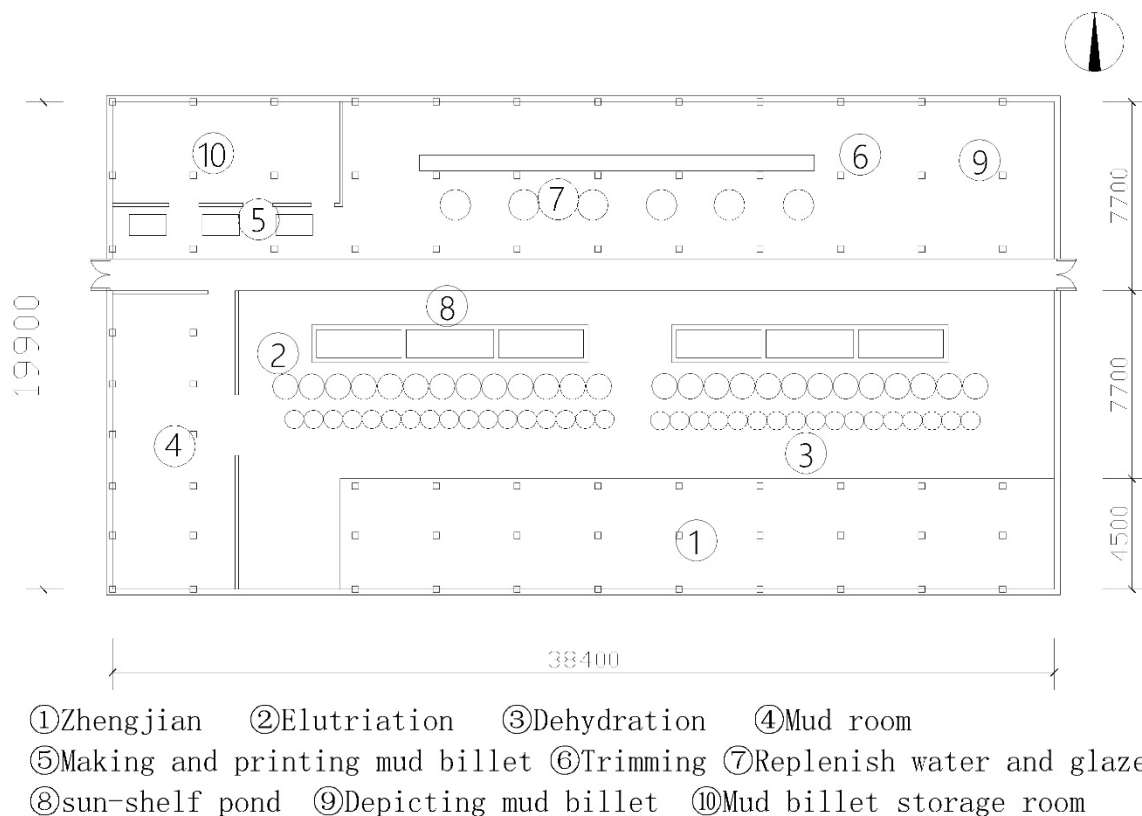


Figure 1. The plan of Jingdezhen traditional manual porcelain workshop

Taking the existing large-scale round ware workshop in Jingdezhen ancient kiln as an example (see Fig.1), the main workshop building generally faces south, consisting of zhengjian (porcelain molding and production), poststep (passageway), granary (raw material storage), mud house (stale and training of mud materials), inner yard (sunning yard), granary, etc. The southern part of the yard includes granary, granary, and inner yard, which are granary preparation area. The north is the central forming area, and the middle is the rectangular inner courtyard, which is open to the inner courtyard.

2.2. The Functional Divisions of the Workshop

2.2.1. The Zhengjian

Zhengjian of the workshop is the main part of the traditional porcelain workshop in Jingdezhen, and also the main place of the ceramic molding process. In order to adapt to the local climate features, the orientation of zhengjian is north facing south or south slightly east. The main room is generally in the unit of the bay, two pillars for a bay, a room will be based on the size of the design of several bay. Include all process flow of modelling and adornment between, each kind of work arranges flexibly according to the sequence of production working procedure.

2.2.2. The Slope Step

Under the eaves of zhengjian, there is a corridor equal in length and parallel to zhengjian, connecting the east and west doors, commonly known as the slope steps. The corridor under the eaves can shelter from wind and rain, and will not affect the work of craftsmen due to weather reasons, which has a good practical function. The slope steps are generally 30 cm higher than the ground in the middle, so that porcelain artisans can easily place and remove the body from the eaves.

2.2.3. The Granary

Granary is a storage warehouse of raw materials required in porcelain production process, it is located in the north and south sides of the inner courtyard, separated by the sun factory, the building height is 1 to 2 meters lower than the zhengjian, in order to make zhengjian get enough light. Granaries are located in the southeast of the factory, near the east gate. Such a layout is convenient for raw materials in and out, shortens the distance of handling, and reflects the reasonable and economic layout of the workshop.

2.2.4. The Clay Treating Shop

The clay treating shop is a space where mud materials are stale and trudded and turned over. Located on the west side of the center, it is close to the work station of mud kneading and billet making. It can save time and effort to transfer mud materials to the billet making craftsmen, so as to reduce labor intensity and improve work efficiency. It sits in the direction of west to east, can avoid the mud due to the west, so that the water in the mud evaporates too fast and is not good to use.

2.2.5. The Inner Courtyard

The inner courtyard is a natural dry place of mud, and is also an important place for lighting and ventilation in the whole workshop, so it is also known as a suntan. In order to keep the inner courtyard free from buildings and have sufficient sunshine throughout the year, the factory buildings are designed slightly lower than the actual buildings.

2.2.6. The Sun-shelf Pond

The sun-shelf pond is located in the middle of the inner courtyard, which is composed of sun-shelf and pond. The sun-shelf is placed above the pond. The sun-shelf is used for sun-shelf and the pond is used for washing and settling raw materials (see Fig. 2). This unique layout not only cleverly uses the limited space, but also shows the industrial significance of people after long-term practice.



Figure 2. The sun-shelf pond

2.3. The Rationality and Economy of Workshop Layout

The overall layout of the workshop follows the features and process sequence of porcelain handicraft everywhere. It is ingenious in conception and reasonable in function, which is the layout method summarized by people in long-term production practice.

The workshop adopts courtyard layout to meet the needs of the circular process, from the entry of raw materials, reserve to production, drying, its spatial streamline is very clear, save time and effort. In addition, the courtyard provides a relatively closed environment for porcelain making. At the same time, inside the courtyard, there are good sunshine and ventilation conditions. The inner gate depth is the same length as the inner gate depth, and the height of the inner gate is slightly lower than the gate height. The scale relationship among the three is to meet the needs of operation, lighting, and ventilation in the workshop. In terms of energy utilization, Jingdezhen traditional manual porcelain workshops maximize the utilization of natural resources such as solar energy, wind energy and natural rain water, reflecting the economic features of workshop layout.

3. Unique Architectural Features

3.1. Workshop Architectural Style Under the Influence of "Town Style Architecture"

"Town style architecture" is a professional term put forward by some scholars in recent years. Wang Tongmao and other scholars believe that "town style architecture" is based on the historical block with Jingdezhen Imperial Kiln Factory as the center, and is developed around the production, trade and life functions of kiln industry. With kiln bricks as the building material, it forms an architectural school with kiln house, workshop, front shop and back house and other production and life harmonious unity. This statement can accurately summarize the style of Jingdezhen porcelain architecture. The traditional manual porcelain workshops in Jingdezhen are mainly courtyard-style, but they have formed their own unique features. Although they are mostly influenced by hui-style architecture, they are "town style architecture" in architectural style, which reflects the general style of porcelain architecture in Jingdezhen.

3.2. Unique Architectural Form

The traditional manual porcelain workshop building in Jingdezhen uses the construction method of traditional buildings in China. The roof is a slope roof with a figure shape. The beams of the roof wooden structure are paved with gray tiles. The roof is a wooden structure, and the foundation is stone or brick. The courtyard is wrapped to form a plane and three-dimensional spatial combination, showing a simple and elegant beauty. In the details of the building has also done some artistic processing. For example, the main door of the workshop is eight-shaped, and the upper end of the door ends with a mountain flower wall. In the center of the roof, bricks and tiles constitute various auspicious plans, reflecting the folk charm of the workshop building, which is quite distinctive.

3.3. Concise and Practical Structural Features

Traditional porcelain workshops focus on production and take the actual function into consideration, instead of blindly pursuing huge volume. If the workshop scale needs to be expanded, the "room" will be added in the horizontal direction. The extension of the workshop to the "room", with the beam column system as the main structure, to achieve the load-bearing effect of "wall down house not collapse". The beams of the workshop are connected to the columns to form and connect the frame. When connecting the frame, it is connected with part of the connecting rod, which is divided into different heights of the wooden frame, so that it forms a dense distribution but scattered at random blank frame, which is multi-purpose and has become a major feature of the workshop building structure.

3.4. The Building Materials Adapted to Local Conditions

The workshop building is made of local materials and uses a brick and wood structure. Jingdezhen is rich in forest resources, rich in fir, miscellaneous wood, pine, etc., used in the workshop wood structure not only saves wood, but also increases the flexibility of the structure. The bricks used in the workshop are mostly abandoned kiln bricks. Kiln bricks are the main material of masonry kilns, which have the features of strong compression resistance, frost resistance and weathering resistance. People in Jingdezhen reuse the waste kiln bricks to build houses, and use them in a large number of places such as walls, wall bases, floors, column bases and sun racks to turn waste into treasure. The overall architecture is simple and unique to Jingdezhen, forming the regional features of Jingdezhen porcelain architecture.

4. The Construction Concept of "Harmonious Unity Between Man and Nature"

In the pre-Qin period, it was recorded in the famous handicraft work "Kaogongji" in China that "the heavens are sometimes, the earth is alive, the materials are beautiful, and the workmanship is coincidence. If you combine these four, then you can be good." It means that the creation should conform to the weather, adapt to the earth's atmosphere, excellent materials, and exquisite craftsmanship. Only when these four conditions are met, can we make sophisticated artifacts. Its scientificity and rationality are self-evident, and it is often used in modern design theory and practice research, as is the construction of traditional manual porcelain workshops in Jingdezhen.

Jingdezhen has an advantageous geographical location and the continuous development of traditional hand-made porcelain skills, prompting the emergence of hand-made porcelain workshops. The traditional hand-made porcelain workshops in Jingdezhen are mostly located in areas close to the river, with abundant raw materials, sufficient fuel, and convenient transportation, showing the typical features of adapting to local conditions. People make use of natural ecological resources such as topography, rainfall, sunlight, and water flow, choose flat

ground to build courtyard-style workshops, and flexibly adjust the height and volume of workshops to make their layout reasonable and scattered. The workshop space layout revolves around the traditional hand-made porcelain process, which is compact and reasonable. The interior space design and architectural appearance of the manual workshops are mainly function-oriented, presenting the beauty of simplicity. The traditional manual porcelain workshop in Jingdezhen has achieved the perfect unity of function, structure, efficiency, and style. It embodies the concept of "harmony between man and nature", which can be said to be a classic work of harmonious coexistence between man and nature.

5. Conclusion

Jingdezhen is the only handicraft city that has prospered for thousands of years because of ceramics. The prosperity of its porcelain industry is bound to affect the architectural type and spatial layout of manual porcelain workshops, forming its typical features. The layout of Jingdezhen traditional manual porcelain workshop is reasonable. The space Settings of each unit are not only clever and full of wisdom, but also powerfully connect each production process, which is compact and convenient. Combined with the features of the porcelain industry, the workshop architecture presents a unique regional form and pursues the unification of art and technology. The simple architecture of the building, based on local materials, and the idea of opening inside and closing outside, well reflects the wisdom of the local people. For today's industrial production architecture, it is still worthy of inspiration and reference.

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